Problems 3.

Please integrate:

I = ∫ dx Exp[-x]\*(Sin[10x]2)^(-1/3)

over the range from 0 to b where b is as large as you can compute (b can be infinity in principle)./

1. Use constant step h
2. Use Gaussian Quadrature
3. Challenge: If you like try making your own orthogonal polynomials
4. Iterate using methods (1) and (2) and try to get as high an accuracy as possible (in certain limits it is quite a challenge)

(Extra Credit: If you know how to deal with complex numbers, do the following.)

Now we make the integrand to be complex by this modification:

I = ∫ dx Exp[-x]\*(Sin[10x]2)^(-1/3)\***Log[Sin[x]]\*Sin[x]**

Repeat step(1) to (4) above. The result should contain both real and imaginary parts.

Good luck! If questions arise then please contact Xiaozhou and myself.